<u>What is claimed is</u>:

1. A system for testing a wireless network of transceivers, comprising:

an optical modulator, adapted to modulate optical energy with signal energy propagating from a first group of said transceivers of said network to form a vector of optical signals;

an optical matrix-vector multiplier (MVM), adapted to receive said vector of optical signals, and having a matrix of optical channel weights which are modifiable in accordance with desired parameters to represent at least on parameter of said wireless network, said optical MVM being further adapted to output signals based on said received vector of optical signals and said optical channel weights; and

a detector device, adapted to detect said output signals and to provide said output signals as an output vector of signals to a second group of transceivers of said network.

2. A system as claimed in claim 1, wherein:

said detector device includes an amplifier device, adapted to amplify said output signals to create said output vector of signals.

3. A system as claimed in claim 1, wherein:

said signal energy includes radio frequency (RF) signal energy and said output signals include RF signals.

4. A system as claimed in claim 1, wherein:

said optical modulator is adapted to modulate said optical energy at a plurality of different optical wavelengths, to enable full duplex communication simulation of said network.

5. A system as claimed in claim 1, wherein:

said matrix of optical channel weights is replicated in order to provide a reciprocal transmission path between each said transceiver of said network, and to increase the dimension of said input and output vectors to represent transceivers for said reciprocal transmission paths, to enable full duplex communication simulation of said network.

6. A system as claimed in claim 1, wherein:

said optical modulator includes a plurality of optical detectors, each adapted to receive respective said signal energy from a respective one of said transceivers in said first group.

7. A system as claimed in claim 1, wherein:

said detector device includes a plurality of detectors, each adapted to receive a respective said output signal.

8. A system as claimed in claim 1, further comprising:

a delay device, adapted to impose respective delays on each of said output signals before said output signals are received by said detector device.

9. A system as claimed in claim 8, wherein:

said delay device includes an array of delay devices, each configured to impose a respective delay on a respective one of said output signals.

10. A system as claimed in claim 1, further comprising:

a first lens system, adapted to direct said vector of optical signals onto said optical MVM.

11. A system as claimed in claim 10, wherein:

said first lens system is adapted to direct each respective component of said vector of optical signals onto a respective row of said optical channel weights of said optical MVM.

12. A system as claimed in claim 1, further comprising:

a second lens system, adapted to direct said output signals from said optical MVM onto said detector device.

13. A system as claimed in claim 12, wherein:

said second lens system is adapted to direct said output signals from rows of said optical channel weights of said optical MVM onto a row of detectors of said detector device.

14. A method for testing a wireless network of transceivers, comprising:

modulating optical energy with signal energy propagating from a first group of said transceivers of said network to form a vector of optical signals;

receiving said vector of optical signals at an optical matrix-vector multiplier (MVM) having a matrix of optical channel weights which are modifiable in accordance with desired parameters to represent at least on parameter of said wireless network;

outputting output signals from said optical MVM based on said received vector of optical signals and said optical channel weights; and

detecting said output signals and to provide said output signals as an output vector of signals to a second group of transceivers of said network.

15. A method as claimed in claim 14, wherein:

said detector device includes an amplifier device; and

said method includes controlling said amplifier device to amplify said output signals to create said output vector of signals.

16. A method as claimed in claim 14, wherein:

said signal energy includes radio frequency (RF) signal energy and said output signals include RF signals.

17. A method as claimed in claim 14, wherein:

said modulating modulates said optical energy at a plurality of different optical wavelengths, to enable full duplex communication simulation of said network.

18. A method as claimed in claim 14, wherein:

said receiving includes replicating said matrix of optical channel weights in order to provide a reciprocal transmission path between each said transceiver of said network, and to increase the dimension of said input and output vectors to represent transceivers for said reciprocal transmission paths, to enable full duplex communication simulation of said network.

19. A method as claimed in claim 14, wherein:

said modulating includes receiving, at each of a plurality of optical detectors, respective said signal energy from a respective one of said transceivers in said first group.

20. A method as claimed in claim 14, wherein:

said detecting includes receiving, at each of a plurality of detectors, a respective said output signal.

21. A method as claimed in claim 14, further comprising:

imposing respective delays on each of said output signals before said output signals are detected by said detecting.

22. A method as claimed in claim 21, wherein:

said delay imposing includes using each of an array of delay devices to impose a respective delay on a respective one of said output signals.

23. A method as claimed in claim 14, further comprising:

directing said vector of optical signals through a first lens system onto said optical MVM.

24. A method as claimed in claim 23, wherein:

said first lens system is adapted to direct each respective component of said vector of optical signals onto a respective row of said optical channel weights of said optical MVM.

25. A method as claimed in claim 14, further comprising:

direct said output signals from said optical MVM through a second lens system onto a detector device which is adapted to perform said detecting.

26. A method as claimed in claim 25, wherein:

said second lens system is adapted to direct said output signals from rows of said optical channel weights of said optical MVM onto a row of detectors of said detector device.